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ABSTRACT

This guide states competencies expressed in performance objective format that would normally comprise the instructional goals for business data processing programs on the secondary level. These competencies are grouped into the following categories: punch card equipment operator, data entry operator, data control clerk, data processing librarian, computer operator, entry-level computer programmer, business education core learning objectives, introduction to data processing learning objectives, and business systems learning objectives. Also included is an introduction to and a description of the business data processing program as it exists in Virginia as well as a guide to the suggested use of the stated performance objectives. Appendixes give business data processing facilities and equipment guidelines and a business data processing text book bibliography. (Author/CT)

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BUSINESS DATA PROCESSING

PROGRAM COMPETENCIES

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Division of Program Services, Vocational Education • Department of Education • Commonwealth of Virginia • Richmond, Va. 23216

January 1979

FOREWORD

Business Data Processing is an important part of the business education offerings in many secondary schools in Virginia. The success of the program is reflected in the number of students who have been employed by businesses and industries in the state. This success can be directly attributed to the quality of instruction that has been available to students.

This guide was prepared to assist teachers of Business Data Processing in their instructional programs. Teachers are urged to exercise their creative efforts to adapt and expand the suggestions included in the guide as they seek to meet the individual needs of students.

Dr. W. E. Campbell
Superintendent of Public Instruction

Dr. Melvin H. Garner
Administrative Director of Vocational Education

ACKNOWLEDGMENTS

Appreciation is expressed to the many individuals who contributed to the completion of this guide. Primary acknowledgment is given to the task force members whose untiring efforts resulted in the development of this guide. They are as follows:

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(1976-1977)

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In addition, appreciation is expressed to the data processing teachers in the 37 schools that participated in the business data processing curriculum survey and the 45 business organizations that participated in the business data processing job opportunity survey which formed the basis for development of this curriculum guide.

Special acknowledgement is made for the leadership, direction, and contributions made by Dr. David A. Ameen, Information Systems Department, Virginia Commonwealth University, as he assumed responsibilities for coordinating the preparation and editing of this publication.

Carl E. Jorgensen
State Supervisor
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PART I
THE BUSINESS DATA PROCESSING PROGRAM

INTRODUCTION

At the 1976 Summer In-Service Program, Business Data Processing teachers recommended that a task force be established through the sponsorship of the Department of Education, Commonwealth of Virginia, to accomplish the following objectives:

1. To analyze and evaluate the current Business Data Processing curriculum and instructional offerings.
2. To determine the job- and opportunity-based curriculum requirements by surveying the potentials for BDP graduates.
3. To develop behaviorally expressed objectives that would indicate curriculum requirements.
4. To indentify instructional materials and equipment that would contribute to the attainment of instructional objectives.

The recommendation was accepted, and the task force was formed in the fall of 1976. [1]

As one step in the approach to accomplishing the objectives, the group undertook a study of the business data processing curriculum as it was being conducted at that time. [2] As another step, a survey of potential employers was undertaken to determine what opportunities existed for business data processing graduates and what qualifications within typical entry-level data processing occupations were sought by these organizations. [3]

[1]The Task Force was composed of representatives of different geographical areas of the state as follows:

Member	Area
Lee B. Armistead	Eastern Virginia
Gordon F. Creasy	Central Virginia
Barbara D. Page	Western Virginia
Charles V. Holt	Eastern Virginia
H. James Watts	Northern Virginia
Lynette G. Whitley	Eastern Virginia
George Moltz	Central Virginia

Dr. J. Howard Bryant of Virginia Commonwealth University and Messrs. Carl Jorgensen, and Foster Miles of the State Department of Education worked with the task force.

[2]J. Howard Bryant, *Study of Business Data Processing Curriculum*, 1977; July 4, 1977.

[3]J. Howard Bryant, *Study of Business Data Processing Job Opportunities in Virginia*, September 30, 1977.

Using a statistical analysis of these two studies, the direction of the task force was steered toward a performance objective and standards of achievement guide which would relate to all local programs.

The task force was very aware of the following situations which discourage the production of a specific curriculum guide with topical outlines:

1. Program structures are very different relating to length of class meeting time per day, and number of years the program is offered.
2. Equipment and facilities available for instruction are still varied even though much progress has been made in this area.
3. Differing instructor subject matter backgrounds and on-the-job experiences dictate what specifically will be taught in topical areas as well as the methodology used.
4. Class sizes which also vary directly affect methodology and lab exercises.

It was felt that all programs should be designed around the actual activities that are performed on the job in the entry-level areas with each locality modifying their curriculum to relate to the surrounding data processing job market for graduates.

The task force took the activities indicated by the data processing job study and the V-TECS catalogs for the data processing area and interpreted them into those performance objectives and standards of achievement that seemed reasonable for the secondary level of instruction. It was felt that local programs could further relate these objectives to their personnel, equipment, and student loads. Business education core objectives, data processing background objectives, and objectives for business system applications were also included as these were indicated as being desirable exploration areas by the employers on the data processing job survey.

The performance objectives in this guide identify the outcomes for a competency-based program. All programs should show evidence of CBE implementation by June 1981, as emphasized by the Virginia State Plan For Vocational Education 1977-82.

DESCRIPTION OF BUSINESS DATA PROCESSING PROGRAM

Students who complete the program are prepared for entry-level occupations in data processing. They learn to handle input/output media, to operate equipment for processing business data, computer programming techniques, and foundation skills related to business systems and business data processing occupations.

PROGRAM GOALS

The student will

A. develop entry-level skills required for employment in data processing occupations. Skills emphasized include:

1. operation of data entry and verifying equipment
2. data entry speed and accuracy
3. processing records for computerized systems
4. flow charting techniques
5. writing programs
6. testing and debugging programs
7. hands-on operation of computer equipment
8. business mathematics
9. records management
10. accounting

B. develop human relations skills required for working with others in the office environment.

C. develop competencies required to become an effective citizen, consumer, and worker in the American business system.

EMPLOYMENT OPPORTUNITIES

A. Typical Entry-Level Occupations

Data Entry Clerk
Peripheral Equipment Operator
Programmer Trainee
Computer Operator
Data Control Clerk
Terminal Operator
Data Processing Librarian

B. Advanced level jobs that can be obtained with experience or additional preparation.

Systems Analyst Programmer
Data Processing Supervisor

SEQUENCE OF OFFERINGS

Title	Grade Level
Business Exploration	8th
General Business	9th
Typewriting	10th
Business Data Processing I	11th
Business Data Processing II with Cooperative Office Education Optional	12th

COURSE DESCRIPTIONS

Business Data Processing I

Business Data Processing I is a double-period occupational preparation course offered at the eleventh-grade level. Students are introduced to data processing procedures and examine careers in data processing. The course is job oriented and includes instruction in data entry and peripheral equipment operation. Electronic data processing systems and programming also are introduced.

Business Data Processing II

Business Data Processing II is a double-period occupational preparation course offered at the twelfth-grade level. Emphasis is placed on electronic data processing and writing programs. COBOL and other programming languages are taught. As part of the course, provision is made for hands-on operation of computer equipment. Business systems procedures and organization are included in the instruction. Accounting systems serve as the basis for instruction.

Cooperative Office Education

Cooperative office education is the supervised, on-the-job instructional phase of an occupational-preparation program. Students attend classes part of the day and work in an approved office part of the day for related training. The teacher-coordinator develops with the on-the-job training sponsor and the student an individualized training plan identifying learning experiences in accord with the student's occupational objective. The plan lists instructional activities to be provided in class as well as on the job and provides for assessment of progress toward the student's objectives.

FUTURE BUSINESS LEADERS OF AMERICA, ITS ROLE IN BUSINESS AND OFFICE EDUCATION

The Future Business Leaders of America, referred to as FBLA, is the vocational student organization for all enrolled in business courses. The co-curricular activities of the Future Business Leaders of America are an integral part of a good business education program. The activities are designed to enhance and enrich the business course offerings and many of the activities are appropriate for inclusion in classroom instruction.

Through participation in the organization, business students learn to engage in individual and group business enterprises; to hold office and direct the affairs of a group, to work with representatives of other student organizations, and to compete honorably with their colleagues.

Selected events and supervised projects involve students in cooperative school-community-business activities. FBLA helps to promote awareness of the social and economic opportunities and responsibilities in an increasingly complex society. It helps to develop qualities of business and civic leadership needed by today's youth who are preparing to enter the world of work.

The FBLA plan of organization involves local or school chapters, a state chapter, and the National Association. In carrying out its program of approved activities, a local FBLA chapter may organize several different interest or class groups within a given school. This assures the availability of FBLA activities to all students enrolled in business education courses since the classroom becomes the nucleus for all FBLA activities. Class groups may have their own slate of officers, teacher-advisers, and program of activities designed to meet their own needs and interests.

The Goals of the Future Business Leaders of America

The goals of the FBLA are to:

- Develop competent, aggressive business leadership
- Strengthen the confidence of students in themselves and their work
- Create more interest in and understanding of American business enterprise
- Encourage members in the development of individual projects which contribute to the improvement of home, business, and community
- Develop character, prepare for useful citizenship, and foster patriotism
- Encourage and practice efficient money management
- Encourage scholarship and promote school loyalty
- Assist students in the establishment of occupational goals
- Facilitate the transition from school to work

Data Processing students should become members of FBLA and become involved in its wide range of useful activities. Among the activities is the Data Processing competitive event that is held at the regional, state, and national levels.

PART II
BUSINESS DATA PROCESSING PROGRAM LEARNING OBJECTIVES

SUGGESTED USE OF PERFORMANCE OBJECTIVES

All performance objectives must be implemented by using various methods of classroom and/or lab activities. Foundation skills are usually relatively easy to implement using textbook lecture and workbook type exercises. However, many of the activities from which the technical skills learning objectives were formulated are not best implemented by classroom lecture.

In the following sections all job catagories and subject areas addressed in this guide are discussed with comments regarding implementation and characteristics.

1. Punch Card Equipment Operator

   Punch card equipment is rapidly being phased out by the mini-computer. However, equipment that is available in local programs can be used as a "teaching tool" and not taught as an end in itself. The punch card is an excellent introduction to data processing medium usage as its basic concepts (records, fields, etc.) are used in magnetic mediums. Most of the functions that are performed by punch card equipment are performed by computer systems. This equipment provides elementary introductions to common operations and valuable work stations for simulations and lab exercises. Most schools are now te[illegible]ng only a very limited amount of board wir[illegible]f any at all. Although we are in the era [illegible] magnetic mediums, the punch card at present is still widely used.

2. Data Entry Operator

   This section was designed to fit any type of data entry equipment. Local programs should continue to use any available keypunches regardless of the model, but should attempt to acquire magnetic data entry devices and/or buffered keypunch units. Students trained on keypunch devices can easily convert to magnetic key entry machines. The data entry job market is the strongest of all the entry level areas.

3. Data Control Clerk

   Very little textbook material is available on "how to be a control clerk"; however, after examination of the objectives for this area, you will notice that many of the activities are clerical in nature and can be applied to all manual and automated processes. A data flow simulation on punch card equipment and/or computer equipment would be the best environment for the implementation of data control activities. Again, the job market is very strong in the data control clerk, input/output clerk, and data processing clerk areas.

4. Data Processing Librarian

   Most schools do not have large libraries of magnetic mediums. However, the principles of this area can be accomplished using organizational methods for any medium, inputs, outputs, etc., in manual or automated systems.

5. Computer Operator

   Performance objectives for this area were designed for actual hands-on usage of a computer system whether it be a mini system or a mainframe business computer. Data work flow simulations again would be the best environment for many of these objectives as students would take turns being actual operators processing simulated or "real" data. The job market for the computer operator trainee is increasing with the rapid increase in the use of mini computer systems. Most mini computer operators perform many of the other job activities as well.

6. Entry Level Computer Programmer

   Most local programs are teaching a great deal of computer programming using combinations of either COBOL, RPG, or BASIC. Most of the programming instruction is on an introductory to intermediate level of complexity with such areas as complex file handling and table handling being done by the more capable students, if taught at all. Most local programs cannot place programmer trainees directly into entry-level positions; however, students can often work into programming positions after starting in other areas. Programming instruction also lets the student explore this broad area of data processing and gives excellent experiences in problem solving, accuracy, attention to detail, and organizational activities. Objectives for this area will fit any language taught and considers the "structured approach" to computer programming.

7. Business Education Core Learning Objectives

   Individual programs may greatly supplement this area with other topics. The basic material included is considered important for a well rounded graduate of the data processing program. A great amount of published material is available.

8. Introduction to Data Processing Learning Objectives

   There is also a great deal of textbook material available in this area. As indicated for the business education core items, local programs will need to supplement this area using materials they have adopted or that is in other introductory data processing textbooks. The programs meeting for two years at two to three hours per day will need to supplement greatly for both years of instruction expressing their materials in the competency based instructional format as shown by this guide.

9. Business Systems Applications Learning Objectives

   Many programs use business systems such as accounting, inventory control, order billing, accounts payable, accounts receivable, and payroll to provide realistic programming and computer operations experiences. Full simulations of any of these systems can additionally provide control clerk and data entry activities. At the very least, the performance objectives in these areas can serve as the base for an exploration of these common business systems that are usually automated. The objectives in this area were based on the systems chapters of *Introduction to Data Processing*, Gregg-Mcgraw-Hill, and *Introduction to the Computer, The Tool of Business*, Prentice-Hall.

OUTLINE OF TERMINAL OBJECTIVES

A. Technical Skills Learning Objectives
   1. Punch Card Equipment Operator
      a. Operations and routine maintenance of the card sorter
      b. Operations and routine maintenance of the reproducer
      c. Operations and routine maintenance of the tabulator
      d. Operations and routine maintenance of the interpreter
      e. Operations and routine maintenance of the collator
   2. Data Entry Operator
      a. Performing data entry operations
      b. Performing routine maintenance and detecting machine malfunctions
      c. Maintaining an updated inventory of usable supplies.
   3. Data Control Clerk
      a. Using data control techniques to monitor and control input, and then to properly distribute the output
      b. Verifying correctness, appearance, and consistency of input and output data using job instruction sheets, batch and/or hash totals, batch control sheets, and job reference manuals
      c. Coding input data for data entry processing
      d. Setting up specific computer runs by selecting correct input data, control cards, special labels, and instruction sheets and then to schedule and release those jobs for computer processing
   4. Data Processing Librarian
      a. Filing, retrieving, and maintaining records, disks, tapes, cards, and documents
      b. Maintaining an updated inventory of tape reels and disk packs to determine replacement needs and/or growth rate.
   5. Computer Operator
      a. Preparing the computer to process specific jobs
      b. Operating, monitoring, and controlling the computer and peripheral equipment
      c. Performing basic housekeeping functions
      d. Performing routine maintenance
   6. Entry Level Computer Programmer
      a. Preparing a detailed flowchart or other logical solution for a given set of problem specifications
      b. Coding an application program using an appropriate business computer language such as COBOL, RPG, or BASIC
      c. Testing the validity of the applications program given appropriate test data
      d. Properly documenting programs

B. Foundation Skills Learning Objectives
   1. Business Education Core Learning Objectives
      a. Demonstrating an awareness of career opportunities in the field of data processing
      b. Demonstrating job-seeking skills
      c. Demonstrating an awareness of job-holding skills
      d. Demonstrating personal economic skills
      e. Using the touch system on an electronic calculator in performing basic arithmetic calculations
   2. Introduction to Data Processing Learning Objectives
      a. Understanding the basic concepts of data processing and its development
      b. Applying various computer data representation systems
      c. Identifying and explaining the functions of the various hardware components
      d. Understanding the basic functions and purposes of software systems
   3. Business Systems Applications Learning Objectives
      a. Understanding of the basic elements of accounting
      b. Analyzing the effects of business transactions in accounting
      c. Understanding the recording of transactions in accounting
      d. Understanding the origination, journalization, and posting of business transactions in accounting
      e. Understanding how to prove the ledger and how to prepare financial statements
      f. Understanding how to close ledger accounts
      g. Understanding the operation of a typical accounts receivable system
      h. Understanding the operation of a typical accounts payable system
      i. Understanding a basic inventory management system
      j. Understanding a typical order and billing system
      k. Understanding a typical business payroll system

TECHNICAL SKILLS LEARNING OBJECTIVES

The following learning objectives and standards of achievement are designed to provide students with the necessary entry level technical skills for placement within the indicated data processing occupations:

Punch Card Equipment Operator

A. TERMINAL OBJECTIVE

Ability to develop proficiency in the operations and routine maintenance of the card sorter.

1. ENABLING OBJECTIVE

Be able to operate a card sorter.

STANDARD OF ACHIEVEMENT

a. Operate the sorter for numeric sorting using a deck of cards with a numeric field. Once sorted, all cards must be in ascending numeric sequence, as verified by listing or by the instructor.

b. Operate the sorter for alphabetic sorting, using a deck of cards with an alphabetic field. Once sorted, all cards must be in correct alphabetic sequence as verified by listing or by the instructor.

c. Operate the sorter to select specified cards from a deck, using a deck of punched cards and job instructions. Check the selected cards against the instructor's master list to assure that the correct cards were selected according to the job instructions. No errors are allowed.

d. Block a deck of punched cards into three groups to be sorted individually. Sort each group of cards. When the blocks are reassembled, the deck must be in the required sequence. The instructor will check the deck for accuracy of sequencing according to the master checklist.

e. Operate a sorter having an auxiliary card counter to count a deck of cards. The count must agree with the instructor's count of the card deck.

f. Sort two decks of cards together as a merging operation. The resulting deck must be in correct order as determined by the instructor's master checklist.

2. ENABLING OBJECTIVE

Be able to perform routine maintenance on the card sorter.

STANDARD OF ACHIEVEMENT

a. Clear a card jam from the sorter without assistance and without damaging the machine. Accurately reconstruct torn cards. The card jam had been satisfactorily cleared if the machine will continue processing data.

b. After a new sort brush has been installed on the sorter, adjust the brush to prevent missorting. Make the adjustment according to the following performance guide. The instructor must approve the adjustment of the brush.

Performance Guide

(1) Turn on the main-line switch.
(2) Punch an 8 in a column near the column 80-edge of the card.
(3) Place the card in the feed hopper with the card weight.
(4) Set the column indicator on the column punched.
(5) Turn the hand feed to move the card slowly into the sorter so that contact can be made by the brush through the hole in the card.
(6) Listen for a sound like a "CLICK" when contact is made. At this time the card should be approximately 1/32 inch under the end of the first shute blade.
(7) Press the start key. The reader sensing device has been properly adjusted when the card falls into the 8 pocket.
(8) Repeat the operation near the column 1-edge of the card to check for proper alignment of sensing device for the entire card.

c. Given a simulated or real breakdown, communicate with the service representative in such a way that the representative can respond to the call. The handling of the service call must be in accordance with the instructor's performance guide.

B. TERMINAL OBJECTIVE

Ability to develop proficiency in the operations and routine maintenance of the reproducer.

1. ENABLING OBJECTIVE

Be able to operate the reproducer.

STANDARD OF ACHIEVEMENT

a. Operate the reproducer, using a deck of punched cards and a prewired control panel, to produce a second deck that is identical to the source deck. Compare the first and last cards of each deck to assure accuracy (sight-check).

b. Operate the reproducer, using a detail deck, a master card, and a prewired panel, to gangpunch the current date into the deck. Sight-check the last card gangpunched against the master card. If the reproduced field in the last card is the same as the master

card, all cards are correct. One hundred percent accuracy is required.

c. Wire a control panel from a completed diagram to exact specifications as indicated by the diagram. Examine the output to determine accuracy of wiring.

2. ENABLING OBJECTIVE

Be able to perform routine maintenance on the reproducer.

STANDARD OF ACHIEVEMENT

a. Clear a card jam from the reproducer without assistance and without damaging the machine. Accurately reconstruct torn cards. The jam has been satisfactorily cleared if the machine will continue processing the data.

b. Given a simulated or real machine breakdown, communicate with the service representative in such a way that the representative can respond to the call. The handling of the service call must be in accordance with the instructor's performance guide.

C. TERMINAL OBJECTIVE

Ability to develop proficiency in the operations and routine maintenance of the tabulator.

1. ENABLING OBJECTIVE

Be able to operate the tabulator.

STANDARD OF ACHIEVEMENT

a. Load continuous forms on the tabulator. When properly loaded, the printer will be operable and the forms will be perfectly aligned.

b. Punch a carriage control tape, using a tape punch, carriage tape, and job specifications, to control skipping and spacing of forms as specified in the documentation. When carriage tape is properly punched, glued, and placed in the carriage tape sensing mechanism of the printer, forms will automatically skip and space under program control. One hundred percent accuracy is required.

c. Monitor and interpret display lights to locate the cause of a problem when given an operating situation where processing on the tabulator is halted because of machine problems. Refer to operating manuals if needed. Take proper action to correct the cause of the malfunction. When the correct action has been taken, the machine will resume functioning when the START key is pressed.

d. Wire a tabulator control panel using a completed wiring diagram. The panel must accurately reflect the specifications of the diagram. Examine the output to determine accuracy of wiring.

2. ENABLING OBJECTIVE

Be able to perform routine maintenance on the tabulator.

STANDARD OF ACHIEVEMENT

a. Clear a card jam from the tabulator without assistance and without damaging the machine. Accurately reconstruct torn cards. The card jam has been satisfactorily cleared if the machine will continue processing the data.

b. Given a simulated or real machine breakdown, communicate with the service representative in such a way that the representative can respond to the call. The handling of the service call must be in accordance with the instructor's performance guide.

c. Remove and replace a worn tabulator ribbon. Replacement should be made according to manufacturer's specifications.

D. TERMINAL OBJECTIVE

Ability to develop proficiency in the operations and routine maintenance of the interpreter.

1. ENABLING OBJECTIVE

Be able to operate the interpreter.

STANDARD OF ACHIEVEMENT

a. Operate the interpreter to print data on punched cards using a deck of punched cards and a prewired control panel. At the end of the operation, each card will have a readable interpretation across the top.

b. Wire a control panel to exactly match a completed wiring diagram. Accuracy is determined by comparing card data to printed data.

2. ENABLING OBJECTIVE

Be able to perform routine maintenance on the interpreter.

STANDARD OF ACHIEVEMENT

a. Clear a card jam in the interpreter without assistance and without damaging the machine. Accurately reconstruct torn cards. The card jam has been satisfactorily cleared if the machine will continue processing the data.

b. Remove and replace a worn ribbon. Replacement should be made according to manufacturer's specifications.

c. Given a simulated or real machine breakdown, communicate with the service representative in such a way that the representative can respond to the call. The handling of the service call must be in accordance with the instructor's performance guide.

E. TERMINAL OBJECTIVE

Ability to develop proficiency in the operations and routine maintenance of the collator.

1. ENABLING OBJECTIVE

Be able to operate the collator.

STANDARD OF ACHIEVEMENT

a. Sequence check a deck of cards using a deck of punched cards and a prewired control panel. Identify the cards that are out of sequence by use of the signal cards or error light. Secure the master list from the instructor and check to ascertain that the out-of-sequence cards have been identified with one hundred percent accuracy.

b. Match cards from two files using two decks of cards and a prewired control panel. Label the cards that fall into pocket 1 as "unmatched"; pocket 2 as "matched primary cards"; pocket 3 as "matched secondary cards"; pocket 4 as "unmatched secondary cards." Secure the master list from the instructor and check to ascertain that the operation was performed without error. When all cards match, primary cards will fall into pocket 2 and all secondary cards will fall into pocket 3.

c. Match merge two files of cards using two decks of cards and a prewired control panel. Check any cards that fall into pocket 1 and pocket 3 and manually merge them. The resulting deck must be in correct order as determined by checking the instructor's master list.

d. Merge two files of cards using two decks of cards and a prewired control panel. The resulting deck must be in correct order as determined by checking the instructor's master list.

e. Operate the collator to select specified cards from a file using a deck of cards, a prewired control panel, and job instructions. Note the cards selected and compare with the instructor's master list. The selected cards should not deviate from the master list.

f. Wire a control panel using a completed wiring diagram and job specifications. The wired panel must accurately reflect the specifications.

2. ENABLING OBJECTIVE

Be able to perform routine maintenance on the collator.

STANDARD OF ACHIEVEMENT

a. Clear a card jam without assistance and without damaging the machine. Accurately reconstruct torn cards. The card jam has been satisfactorily cleared if the machine will continue processing the data.

b. Given a simulated or real machine breakdown, communicate with the service representative in such a way that the representative can respond to the call. The handling of the service call must be in accordance with the instructor's peformance guide.

Data Entry Operator

A. TERMINAL OBJECTIVE

To develop proficiency in performing data entry operations.

1. ENABLING OBJECTIVE

Be able to demonstrate the relationship between a source document and the entry record.

STANDARD OF ACHIEVEMENT

Given a source document and the specifications, correctly prepare the entry record, keeping required data in appropriate fields.

2. ENABLING OBJECTIVE

Be able to set up key entry device for keying operation.

STANDARD OF ACHIEVEMENT

Properly prepare key entry machine for operation.

3. ENABLING OBJECTIVE

Be able to prepare data entry program for key entry from record layout.

STANDARD OF ACHIEVEMENT

Using a source document and key entry specifications or record layout, prepare data entry program for automatic operation. Program must be one hundred percent accurate.

4. ENABLING OBJECTIVE

Be able to key data from source documents at a minimum rate of 7000 key strokes per hour with a maximum five percent error rate.

STANDARD OF ACHIEVEMENT

Key the job at a minimum rate of 7000 key strokes per hour with a maximum of five percent error rate, given a set of source documents, data entry specifications and data entry program.

5. ENABLING OBJECTIVE

Be able to verify keyed input for accuracy using appropriate verification device.

STANDARD OF ACHIEVEMENT

Demonstrate appropriate error detection and correction procedures with one hundred percent accuracy, given input that has been keyed from source documents.

6. ENABLING OBJECTIVE

Be able to correct entry errors identified by verification procedures.

STANDARD OF ACHIEVEMENT

Demonstrate appropriate error detection and correction procedures with one hundred percent accuracy, given input that has been keyed from source documents.

7. ENABLING OBJECTIVE

Be able to maintain sequence and control of source documents and relationship to keyed data records.

STANDARD OF ACHIEVEMENT

After keying in data from source documents, the operator will determine that the keyed data and the source documents are in identical sequence.

B. TERMINAL OBJECTIVE

To develop proficiency in performing routine maintenance and detecting machine malfunctions on key entry device.

ENABLING OBJECTIVE

Recognize machine malfunctions and communicate such malfunctions.

STANDARD OF ACHIEVEMENT

Describe the breakdown to the instructor, given a real or simulated machine malfunction.

C. TERMINAL OBJECTIVE

Be able to maintain an updated inventory of usable supplies to determine replacement needs.

ENABLING OBJECTIVE

Be able to maintain current and accurate inventory record of supplies.

STANDARD OF ACHIEVEMENT

Properly prepare inventory supply records to the satisfaction of instructor, given inventory record sheets.

Data Control Clerk

A. TERMINAL OBJECTIVE

Demonstrate ability to use data control techniques to monitor and control input through the various processing areas, and then to properly distribute the output.

1. ENABLING OBJECTIVE

Given input source documents and the documentation for an automated data system, arrange for the preparation and the keying of data, logging and routing the input to the proper destination.

STANDARD OF ACHIEVEMENT

Take a data batch and route the input to the proper places for processing logging all movements in and out.

2. ENABLING OBJECTIVE

Given computer printouts for a reporting cycle and a reports distribution list, demonstrate the ability to distribute all reports on time to the persons indicated on the distribution list. Check each person off when the correct report has been delivered.

STANDARD OF ACHIEVEMENT

The computer printouts for one reporting cycle are given for distribution, along with a distribution list. Distribute each report to the person who is scheduled to receive it, checking off each delivery on the list.

3. ENABLING OBJECTIVE

Demonstrate the ability to update data control and procedure files.

STANDARD OF ACHIEVEMENT

Given information that has been received during the last week, update the data control and procedure files. All information must be placed in the proper file.

4. ENABLING OBJECTIVE

Given a schedule of jobs to be run during the week, demonstrate the ability to use a data control log to reflect the due-in and due-out dates.

STANDARD OF ACHIEVEMENT

Record with one hundred percent accuracy in the data control log the due-in and due-out dates for all jobs scheduled to be run during the week.

5. ENABLING OBJECTIVE

Given a schedule of data entry jobs and information concerning the volume of transactions, due dates, and priorities, assign key entry jobs according to priorities and available manpower.

STANDARD OF ACHIEVEMENT

Prepare a written assignment schedule for key entry which takes into consideration priorities and available manpower and that meets all production requirements.

6. ENABLING OBJECTIVE

Given storage instructions for any type of data medium, store this data medium in the proper location.

STANDARD OF ACHIEVEMENT

Store a data medium in its proper location.

B. TERMINAL OBJECTIVE

Demonstrate ability to verify correctness, appearance, and consistency of input and output data using job instruction sheets, batch and/or hash totals, batch control sheets, and job reference manuals. Correct detected errors and schedule necessary reruns.

1. ENABLING OBJECTIVE

Given a job instruction sheet and a printout, analyze data on the printout for completeness, appearance, and useability.

STANDARD OF ACHIEVEMENT

Given a job instruction sheet and a printout, check off the information requested as it is located on the printout. Write a report of all missing or unusable information.

2. ENABLING OBJECTIVE

Given a job request sheet for a computer job, demonstrate ability to take and analyze it for completeness and accuracy of information needed to run the job. If the job request is not adequate, return it to its source.

STANDARD OF ACHIEVEMENT

Analyze a job request sheet for a computer job for completeness and accuracy of information needed to run the job. Return the job request to its original source for correction if found to be inadequate.

3. ENABLING OBJECTIVE

Given a job that must be rerun because of an error in output, arrange to rerun the job so that the output is an error-free, usable report.

STANDARD OF ACHIEVEMENT

Arrange for a job to be rerun because of errors in output. Check the new output to ascertain that it is correct.

4. ENABLING OBJECTIVE

Given computer output totals and batch control totals, demonstrate ability to correct all errors that are found so that the output totals balance with the batch control totals.

STANDARD OF ACHIEVEMENT

Balance and reconcile output totals with predetermined batch control totals using the

source documents and output documents provided.

5. ENABLING OBJECTIVE

Given an error situation on a printout, analyze the error to determine whether it is a data error. Accurately record the error on the job request sheet and route the job package to the appropriate person for correction.

STANDARD OF ACHIEVEMENT

Examine three printouts which contain errors. Determine if a data error is present and route the job package to the appropriate people for correction.

6. ENABLING OBJECTIVE

Given a data deck to be processed and a set of source documents, visually check the deck for any obvious errors. Error cards may be rerouted to be keypunched or corrected on the spot for immediate processing.

STANDARD OF ACHIEVEMENT

Given a deck of cards with errors, demonstrate the ability to locate obvious errors such as incorrect dates, etc., using the source documents.

7. ENABLING OBJECTIVE

Demonstrate ability to prepare a batch control sheet for a batch of source documents. Properly count the number of documents, assign batch control numbers, and develop necessary control totals on specified fields of data.

STANDARD OF ACHIEVEMENT

Take a group of source documents and divide them into batches for processing. Each batch must have a completed control sheet with correct control totals on specified fields and batch numbers.

8. ENABLING OBJECTIVE

Demonstrate ability to detect a problem that, if not corrected, would cause a delay in production or erroneous printouts from the computer. Confer with the individuals responsible to correct the situation.

STANDARD OF ACHIEVEMENT

Detect an erroneous data batch caused by incorrect or incomplete data. Contact the person responsible for data input and determine the cause of the omission or error. Arrange for correction of the error situation.

C. TERMINAL OBJECTIVE

Demonstrate ability to code input data for data entry processing.

ENABLING OBJECTIVE

Given source data to be used as input for a computer job and the keying format, code the data on source documents and submit for keying.

STANDARD OF ACHIEVEMENT

Take a set of source data sheets; code the information required on the source documents for keying operations. The coding must be without error.

D. TERMINAL OBJECTIVE

Demonstrate ability to set-up specific computer runs by selecting correct input data, control cards, special labels, and instruction sheets and then to schedule and release those jobs for computer processing.

1. ENABLING OBJECTIVE

Given a job to be processed, provide the operator with input data, storage media, and necessary instructions to complete the run.

STANDARD OF ACHIEVEMENT

Given a job to be processed on the computer, provide the operator with input data, materials and instructions necessary to run the job.

2. ENABLING OBJECTIVE

Given two jobs that must be processed in a certain run order and the computer schedule of jobs to be run, recheck the jobs for completeness and arrange them in the correct order for running.

STANDARD OF ACHIEVEMENT

Take two prepared jobs and a schedule of jobs to be run. Recheck the jobs for completeness and arrange them in run order. Release jobs for processing only when jobs are complete and in correct order.

3. ENABLING OBJECTIVE

Given a list of jobs to be run that have sequence and priority considerations, prepare a schedule of jobs to be processed during a shift.

STANDARD OF ACHIEVEMENT

Prepare a written schedule of jobs to be processed during a shift. Take into consideration priority and sequencing considerations.

Data Processing Librarian

A. TERMINAL OBJECTIVE

Ability to file, retrieve, and maintain records, disks, tapes, cards, and documents.

1. ENABLING OBJECTIVE

Be able to file cards, tapes, disk packs, or documents into proper storage locations.

STANDARD OF ACHIEVEMENT

A job has just been completed and the files have been released by the computer operator. You are to place all files in their correct storage locations in accordance with the job run sheets.

2. ENABLING OBJECTIVE

Be able to retrieve cards, tape, disk packs, or documents as required for subsequent processing.

STANDARD OF ACHIEVEMENT

A processing job requires certain files as specified in the job run sheets. You are to retrieve the required files for the computer operator for processing.

3. ENABLING OBJECTIVE

Be able to locate, update, and record changes to documents or files.

STANDARD OF ACHIEVEMENT

Given 12 replacement pages for various reference manuals within your library, locate the correct manual and make the necessary changes. Record changes made into an appropriate log.

4. ENABLING OBJECTIVE

Be able to prepare complete and correct external labels for cataloging files.

STANDARD OF ACHIEVEMENT

Using the installation's standard procedure for labeling, prepare labels for cataloging all new card, tape, and disk files. Include date created, name of file, and job that will use the file. All files must be properly labeled and stored in the library. The instructor or supervisor will inspect the labels to insure correct labeling.

5. ENABLING OBJECTIVE

Be able to detect damage to tape reels and disk packs.

STANDARD OF ACHIEVEMENT

Given a number of reels of tape and disk packs of which some are damaged, inspect the tapes and disks to detect the damaged ones.

B. TERMINAL OBJECTIVE

Be able to maintain an updated inventory of tape reels and disk packs to determine replacement needs and/or growth rate.

ENABLING OBJECTIVE

Be able to associate number of tapes or disks required for current and projected processing jobs, considering rotational and retirement requirements.

STANDARD OF ACHIEVEMENT

Given a number of job run sheets, assign the required number of tape reels and disc packs required to process these jobs allowing for rotational and retirement requirements.

Computer Operator

A. TERMINAL OBJECTIVE

The student will be able to prepare the computer to process specific jobs.

1. ENABLING OBJECTIVE

Demonstrate the ability to determine the peripheral devices needed for a specific job request.

STANDARD OF ACHIEVEMENT

Determine all peripheral devices needed for the job given the job request and job description.

2. ENABLING OBJECTIVE

Identify and obtain the forms needed for the job.

STANDARD OF ACHIEVEMENT

Locate the proper form(s) needed to run the job given forms requirements.

3. ENABLING OBJECTIVE

Locate files required and steps specified for a particular job from the run book.

STANDARD OF ACHIEVEMENT

Consult a run book to determine files required and the steps which must be performed in order to run the job.

4. ENABLING OBJECTIVE

Power up/down the computer and I/O devices.

STANDARD OF ACHIEVEMENT

Go to the computer and power up/down the central processing unit and each peripheral according to standard operating procedures for your equipment.

5. ENABLING OBJECTIVE

Receive turnover from jobs on another shift.

STANDARD OF ACHIEVEMENT

Utilize job request forms and information obtained from the preceding shift operator to successfully complete the jobs in progress.

6. ENABLING OBJECTIVE

Select appropriate JCL for a job to be run.

STANDARD OF ACHIEVEMENT

Select and set up the JCL cards for the job which you have been assigned to run.

7. ENABLING OBJECTIVE

Load the supervisor; reload the supervisor.

STANDARD OF ACHIEVEMENT

a. Given a stand-alone program to run, load the supervisor for the run.

b. In the process of loading a program, the supervisor was lost; reload the supervisor and proceed to execute the program.

8. ENABLING OBJECTIVE

Start a line for a remote terminal.

STANDARD OF ACHIEVEMENT

Go to the operator's console and initiate a connection with a specific remote terminal. Communicate through the console with the remote terminal.

9. ENABLING OBJECTIVE

Utilize utility programs.

STANDARD OF ACHIEVEMENT

Given specifications for operations which call for the use of utility programs, use utility programs to perform all of the following functions.

(1) Initialization of a disc and/or tape
(2) Disc file allocation
(3) Disc to disc file copying
(4) Dumping
(5) Disc-to-tape and tape-to-disc file copying
(6) Disc file build
(7) Listing a card file
(8) Tape to tape copying
(9) Listing a disc file
(10) Listing a tape file

10. ENABLING OBJECTIVE

Assign disc and/or tape drives to appropriate logical address.

STANDARD OF ACHIEVEMENT

Given a program to run which uses tape and/or disc input or output, locate the switches that set the logical address(es) of the drive(s) and assign the drives to appropriate logical addresses according to job specifications.

11. ENABLING OBJECTIVE

Load continuous forms in printer.

STANDARD OF ACHIEVEMENT

Given a box of continuous forms to be loaded in the printer, load and align the forms according to the performance guide.

Performance Guide

Because of model differences, certain operations will vary or be optional. Therefore, only general performance steps are listed below:

(1) Ensure that a sufficient supply of paper is available for printing the job.
(2) Raise the covers necessary to expose manual controls.
(3) Move the printing mechanism.
(4) Raise the forms tractors and remove any unused forms from the printer.

(5) Move the forms tractors to the proper position.
(6) Engage the forms on the pin feed and close the forms tractors.
(7) Tighten the tension with the right hand forms tractors.
(8) Align the forms with the print mechanism, using the forms, space and adjustment controls
(9) Close the cover(s).
(10) Press the start key; the printer ready light will come on.

12. ENABLING OBJECTIVE

Determine carriage control tape required and mount on printer.

STANDARD OF ACHIEVEMENT

Locate carriage tape required by job specification and place in the sensing mechanism on the printer.

Performance Guide

(1) Stop printing.
(2) Raise cover.
(3) Raise carriage tape guide.
(4) Remove undesired carriage tape, if any
(5) Place tape provided in sensing mechanism, carefully engaging the sprocket holes.
(6) Close carriage tape guide.
(7) Restore carriage tape.
(8) Ready the printer.
(9) Close printer cover

13. ENABLING OBJECTIVE

Punch carriage control tapes.

STANDARD OF ACHIEVEMENT

Given a tape punch and blank carriage tape, punch and glue a tape that will control head-of-form skipping on stock forms.

14. ENABLING OBJECTIVE

Adjust printer controls to obtain optimum print quality and alignment.

STANDARD OF ACHIEVEMENT

Adjust the printer controls to obtain optimum print quality and alignment.

15. ENABLING OBJECTIVE

Set tape drive for proper density.

STANDARD OF ACHIEVEMENT

Locate the control used for setting the tape density for a tape drive. Insure that the tape density is set according to the specifications for the job to be run.

B. TERMINAL OBJECTIVE

The student will be able to operate, monitor and control the electronic computer and peripheral equipment.

1. ENABLING OBJECTIVE

Activate reader to read job into the system.

STANDARD OF ACHIEVEMENT

Given a card file, place the cards in the reader and activate the card reader to read the job into the system.

2. ENABLING OBJECTIVE

Load Programs.

STANDARD OF ACHIEVEMENT

Given a program to run on the computer, place the program on the correct input device and load into memory.

3. ENABLING OBJECTIVE

Check output material against job specifications.

STANDARD OF ACHIEVEMENT

Go to the printer and check the output against job specifications to determine whether work is complete. If any work is incomplete, rerun if operator error, otherwise record it in the proper log and notify the person who is responsible for maintaining the program.

4. ENABLING OBJECTIVE

Communicate with the computer through the console.

STANDARD OF ACHIEVEMENT

Using the program documentation that has been provided, communicate with the computer through the console. Refer to operator's manual at any time.

5. ENABLING OBJECTIVE

Detect, determine the cause of, and correct a machine malfunction.

STANDARD OF ACHIEVEMENT

The CPU is unable to complete an instruction because of machine malfunction. Determine the cause and correct the malfunction.

6. ENABLING OBJECTIVE

Interpret the display lights on a computer.

STANDARD OF ACHIEVEMENT

Monitor the display lights on the CPU control panel and peripheral devices. Interpret the lights and take the proper action in response to the signals. You may refer to operator's manuals.

7. ENABLING OBJECTIVE

Observe for abnormal termination of job.

STANDARD OF ACHIEVEMENT

There is a computer job in progress. Observe for any indication of abnormal termination. If the job terminates before completion, report it to your instructor.

8. ENABLING OBJECTIVE

Observe for verification printouts which indicate end of job or job steps.

STANDARD OF ACHIEVEMENT

A series of jobs is in progress. Watch the printer and console for messages which verify the completion of jobs or job steps. Record on the run sheet each verification as it is observed.

9. ENABLING OBJECTIVE

Perform halt/restart procedures.

STANDARD OF ACHIEVEMENT

Given a job instruction sheet for a job to be run on the computer and a halt situation, restart the program at the beginning of the phase in which the halt occurred. You may refer to the operations manual.

10. ENABLING OBJECTIVE

Remove JCL cards from job deck.

STANDARD OF ACHIEVEMENT

Obtain a complete card file from a job that has been run. Identify and remove the JCL cards from the deck and file them in the proper place.

11. ENABLING OBJECTIVE

Remove output from peripheral device, label and store in proper place.

STANDARD OF ACHIEVEMENT

A computer run has ended normally. Remove all output from peripheral devices, label and store in the proper place.

12. ENABLING OBJECTIVE

Run test of new program for systems and programming.

STANDARD OF ACHIEVEMENT

You have been asked by a programmer to test a new program. You have the program and the test data. Perform the test.

Performance Guide

(1) Operate the computer to perform language translation.
(2) Set up test data.
(3) Ready output devices.
(4) Operate computer to test program.
(5) Remove all data from computer.
(6) Record results of the test on job request.
(7) Return all materials to programmer.

13. ENABLING OBJECTIVE

Use a sort-merge utility program to sort records.

STANDARD OF ACHIEVEMENT

Use a sort-merge utility program to sort records on the computer according to specifications for the job.

14. ENABLING OBJECTIVE

Load cards into card punch.

STANDARD OF ACHIEVEMENT

Given a supply of blank cards for punching, properly load these cards into the card punch.

15. ENABLING OBJECTIVE

Load and unload a disc drive.

STANDARD OF ACHIEVEMENT

Given a loaded disc drive and a new disc pack properly unload the pack from the disc drive, mount the new pack, and set appropriate switches.

16. ENABLING OBJECTIVE

Load and unload a tape drive.

STANDARD OF ACHIEVEMENT

Given a loaded tape drive and a new reel of tape, unload the old tape reel from the drive and mount the new reel correctly positioning it under the read/write heads.

C. TERMINAL OBJECTIVE

The student will be able to perform basic housekeeping functions. The student will be able to:

1. ENABLING OBJECTIVE

Check the JCL cards in the file against the job specifications for accuracy.

STANDARD OF ACHIEVEMENT

Given specifications for a job to be run, check the JCL cards in the file against the job specifications for accuracy. If any discrepancy is located, prepare new JCL cards in accordance with the specifications. When you are finished with the JCL cards, return them to their proper file.

2. ENABLING OBJECTIVE

Place all files in their correct storage locations.

STANDARD OF ACHIEVEMENT

A job has just been completed. You are to place all files in their correct storage locations.

3. ENABLING OBJECTIVE

Prepare external labels for cataloging all new card, tape, and disc files.

STANDARD OF ACHIEVEMENT

For a one-week period, it will be your responsibility to prepare external labels for cataloging all new card, tape, and disc files. All information for efficient use and storage of files must be included. At the end of the week there should be no unlabeled or mislabeled files.

4. ENABLING OBJECTIVE

Separate multi-part forms.

STANDARD OF ACHIEVEMENT

Given a set of tabulated forms with two carbon copies, use the decollator to separate the forms.

5. ENABLING OBJECTIVE

Schedule peripheral devices to be used for jobs to be run on a given shift.

STANDARD OF ACHIEVEMENT

Refer to the list of jobs to be run during the day. Prepare a written schedule of peripheral devices, taking into consideration availability and priority of jobs. Schedule the equipment so that there is no conflict in use.

Performance Guide

(1) Obtain information on jobs to be run.
(2) Determine peripheral equipment for each job.
(3) Prepare written schedule of jobs to be run.
(4) Check for and resolve peripheral equipment conflicts.
(5) Submit schedule to instructor or supervisor for approval.

6. ENABLING OBJECTIVE

Maintain a record of equipment usage.

STANDARD OF ACHIEVEMENT

Given a computer operator's log or other equipment usage logs, the student will accurately record the beginning and ending time of each job and its final status.

D. TERMINAL OBJECTIVE

The student will be able to perform routine maintenance on the computer system. The student will be able to:

1. ENABLING OBJECTIVE

Clear card jams.

STANDARD OF ACHIEVEMENT

Clear the card jam in the card reader or punch without assistance and reconstruct any torn card(s) for reinsertion in the deck.

2. ENABLING OBJECTIVE

Cut tape and position new load point marker.

STANDARD OF ACHIEVEMENT

Given a reel of damaged tape, inspect and determine the point of damage and position a new load point marker approximately 15 feet from the beginning of the tape.

3. ENABLING OBJECTIVE

Replace printer ribbons.

STANDARD OF ACHIEVEMENT

Remove worn ribbon from printer and replace according to a diagram provided.

4. ENABLING OBJECTIVE

Clean card readers, printers, and tape drives.

STANDARD OF ACHIEVEMENT

Clean peripheral equipment when required according to an operator maintenance checklist. Place a check beside each peripheral on the checklist after maintenance has been completed.

Entry-Level Computer Programmer

A. TERMINAL OBJECTIVE

Demonstrate ability to prepare a detailed flowchart or other logical solution for a given set of problem specifications.

ENABLING OBJECTIVE

Demonstrate the ability to develop a logic sequence for coding a program given job specifications, I/O record layouts, and logical solution sheets.

STANDARD OF ACHIEVEMENT

Given job specifications and I/O record layouts, prepare a logic sequence for coding a program.

B. TERMINAL OBJECTIVE

Demonstrate ability to code from a logic sequence an application program using an appropriate business computer language such as COBOL, RPG, or BASIC.

1. ENABLING OBJECTIVE

Demonstrate the ability to code applications programs given logical solution sheets, program specifications, data record layouts, programming reference manuals, and coding sheets.

STANDARD OF ACHIEVEMENT

Given program specifications, a logical solution sheet, I/O record layouts, programming reference manuals, and coding sheets, code and internally document an applications program using high-level languages such as COBOL, BASIC, or RPG.

2. ENABLING OBJECTIVE

Demonstrate the ability to code parameters for utility programs given utility reference manuals, job specifications, record layouts, and parameter coding forms.

STANDARD OF ACHIEVEMENT

Code parameters for utility programs using materials supplied.

3. ENABLING OBJECTIVE

Demonstrate the ability to code instructions for an identified routine given program specifications, programmer's reference manual, logic sequence, and coding sheets.

STANDARD OF ACHIEVEMENT

Code instructions for an identified routine from a logic sequence.

4. ENABLING OBJECTIVE

Demonstrate the ability to desk-check and correct program syntax error(s) given a program with error(s) and verified documentation.

STANDARD OF ACHIEVEMENT

Correct program syntax error(s) using verified documentation.

C. TERMINAL OBJECTIVE

Demonstrate the ability to test the validity of the applications program given appropriate test data.

1. ENABLING OBJECTIVE

Demonstrate the ability to desk-check the logical validity of a source program prior to compilation or interpretation given program specifications, logic sequence, I/O record layouts, listing of the source program, test data, and completed coding sheets for source program.

STANDARD OF ACHIEVEMENT

Desk-check the logical validity of program listing prior to compilation or interpretation.

2. ENABLING OBJECTIVE

Demonstrate the ability to compile or interpret a program given a source program.

STANDARD OF ACHIEVEMENT

Compile or interpret the program from a source listing.

3. ENABLING OBJECTIVE

Demonstrate the ability to correct syntax errors from a compilation or interpretation listing.

STANDARD OF ACHIEVEMENT

Correct syntax errors that occurred during compilation or interpretation.

4. ENABLING OBJECTIVE

Verify that the program and text output data comply with program specifications.

STANDARD OF ACHIEVEMENT

Review test results with user/instructor to determine acceptability of output.

D. TERMINAL OBJECTIVE

Demonstrate the ability to properly document programs.

1. ENABLING OBJECTIVE

Demonstrate the ability to write a documentation narrative giving record layout(s), program logic, sequence, and program specifications.

STANDARD OF ACHIEVEMENT

Write a documentation narrative for a program.

2. ENABLING OBJECTIVE

Demonstrate the ability to complete input/output record layout forms.

STANDARD OF ACHIEVEMENT

Describe the input/output for a job on the I/O Definition Sheet using the appropriate forms and references.

3. ENABLING OBJECTIVE

Demonstrate the ability to prepare a console operator's run sheet given program requirements, source program listing, Operations Run Sheet, Logic Sequence forms, Job Stream forms, and Program Set-up specifications.

STANDARD OF ACHIEVEMENT

Prepare a correct console operator's run sheet furnished with necessary forms and references.

4. ENABLING OBJECTIVE

Demonstrate the ability to prepare a Data Control Instructional worksheet given program and operation specifications.

STANDARD OF ACHIEVEMENT

Prepare a correct Data Control Instructional worksheet.

FOUNDATION SKILLS LEARNING OBJECTIVES

The following learning objectives and standards of achievement are designed to provide students with the necessary *foundation skills* related to business systems and data processing occupations:

Business Education Core Learning Objectives

A. TERMINAL OBJECTIVE

Demonstrate an awareness of career opportunities in the field of data processing.

1. ENABLING OBJECTIVE

Be able to identify data processing positions by job title and description.

STANDARD OF ACHIEVEMENT

Identify job titles and match job descriptions given a list of job titles and list of job descriptions.

2. ENABLING OBJECTIVE

Be able to identify job entry level requirements for data processing positions.

STANDARD OF ACHIEVEMENT

Match job title and job level requirements given a list of job titles and a list of job entry level requirements.

3. ENABLING OBJECTIVE

Be able to identify training opportunities for advanced study in the field of data processing.

STANDARD OF ACHIEVEMENT

List training opportunities for advanced study in the field of data processing.

B. TERMINAL OBJECTIVE

The student will be able to demonstrate job-seeking skills.

1. ENABLING OBJECTIVE

Be able to demonstrate self-awareness of his/her abilities and skills in relation to data processing job positions.

STANDARD OF ACHIEVEMENT

List individual abilities and skills and match them to a listing of job entry level requirements of data processing positions.

2. ENABLING OBJECTIVE

Be able to demonstrate the ability to use a variety of sources of job vacancy information.

STANDARD OF ACHIEVEMENT

a. Interpret the information presented in a given classified advertisement for a data processing position, including terminology, abbreviations, and the specified job requirements.
b. Identify services offered through the State Employment Service given a list of possible services.
c. Correctly identify the services and characteristics of private employment agencies given a set of statements.
d. Identify jobs for which a civil service examination would be required from a list of jobs.

3. ENABLING OBJECTIVE

Be able to demonstrate the ability to apply for a job.

STANDARD OF ACHIEVEMENT

a. Write a letter of inquiry about a job opening given a classified ad or company name and address.
b. Correctly fill out a sample application blank.
c. Correctly prepare a resume.
d. Demonstrate a knowledge of appropriate interview techniques by participating in a simulated interview or by evaluation of an interview demonstration.
e. Demonstrate appropriate follow-up procedures for an interview by writing a follow-up letter.
f. Properly use the telephone in making an inquiry about a job or in following up an interview by participating in a demonstration or by evaluating a demonstration.
g. Identify prevailing wage rates for various data processing positions by matching wage ranges with job positions.
h. Identify the procedures for obtaining necessary working papers by matching a list of procedures with a list of forms such as Social Security and Work Permit for minors.

C. TERMINAL OBJECTIVE

The student will be able to demonstrate an awareness of job-holding skills.

1. ENABLING OBJECTIVE

Be able to identify the characteristics of proper personal appearance as required by employers.

STANDARD OF ACHIEVEMENT

Identify the desirable characteristics of proper personal appearance from a list of desirable and undesirable characteristics.

2. ENABLING OBJECTIVE

Be able to demonstrate an awareness of the personal attributes and practices involved in positive interpersonal relationships.

STANDARD OF ACHIEVEMENT

a. Identify the personal attributes of employees from case studies illustrating interpersonal

problems e.g., dishonesty, jealousy, absenteeism, prejudice, etc.

b. Identify the types of interpersonal practices that could lead to problems on the job and identify means of resolving the problems using case studies illustrating interpersonal problems e.g., dating, borrowing and lending, gossipping, etc.

3. ENABLING OBJECTIVE

Be able to identify the mutual responsibilities of employer and employee.

STANDARD OF ACHIEVEMENT

a. Identify the responsibilities of an employer from a list of possible responsibilities e.g., safe working conditions, correct wages, tax records, labor laws, etc.
b. Identify the responsibilities of an employee from a list of possible responsibilities e.g., punctuality, attitude, loyalty, etc.

4. ENABLING OBJECTIVE

Be able to demonstrate effective oral communication skills necessary in a data processing office.

STANDARD OF ACHIEVEMENT

a. Give verbal operating instructions to another student or to the instructor given a set of written instructions or prior knowledge.
b. Verbally communicate a work problem to the instructor giving a simulated or actual problem.
c. Verbally communicate the status of work-in-progress to another student given a situation in which there is an operator turn-over.

5. ENABLING OBJECTIVE

Be able to demonstrate telephone communication skills as used in a data processing office.

STANDARD OF ACHIEVEMENT

a. Properly answer incoming telephone call and effectively communicate with caller given a simulated call or by evaluating a demonstration.
b. Properly answer incoming call and take written message to be communicated to a third party giving a simulated call or by evaluating a demonstration.
c. Properly place a call to an outside party and communicate effectively in a simulated situation or by evaluating a demonstration.

6. ENABLING OBJECTIVE

Be able to demonstrate the ability to maintain a neat work environment.

STANDARD OF ACHIEVEMENT

Maintain a neat work environment as determined by instructor evaluation of condition of classroom training station.

D. TERMINAL OBJECTIVE

The student will be able to demonstrate personal economics skills.

1. ENABLING OBJECTIVE

Be able to identify and apply basic wage, salary and benefit concepts and procedures.

STANDARD OF ACHIEVEMENT

a. Compute total weekly earnings given the hourly pay rate, overtime rate, and total hours for an employee.
b. Compute net earnings given the gross earnings, tax rates, and deduction list for an employee.
c. Calculate the dollar value of fringe benefits given a list of possible company benefits.

2. ENABLING OBJECTIVE

Be able to identify and apply principles of taxation and tax reporting procedures.

STANDARD OF ACHIEVEMENT

a. Correctly fill out the following forms for the deductions of taxes from wages: State withholding and Federal with-holding given the forms and number of exemptions.
b. Compute the amount of tax due on an individual's earnings given information about tax status, adjusted gross income, and sample federal and state tax tables.
c. Complete the short form (1040 A) for federal income tax reporting given a completed W-2 form, 1040 A form, tax tables and instructions.
d. Complete the short form 760 S for state tax reporting given a completed W-2 form, 760 S form, tax table and instructions.

3. ENABLING OBJECTIVE

Be able to demonstrate a knowledge of personal banking procedures.

STANDARD OF ACHIEVEMENT

a. Write a check for a purchase and make entry in check register given a check, check register, amount of purchase and payee name.
b. Complete deposit form and make entry in the check register given deposit form, amount of deposit, and check register.
c. Reconcile a checking account, given sample check register, bank statement and canceled checks.
d. Compute interest on savings account given the principal, interest rate, and time period.

4. ENABLING OBJECTIVE

Be able to demonstrate a knowledge of procedures associated with loans, installment buying and credit.

STANDARD OF ACHIEVEMENT

a. Compute the difference in cost between purchasing an automobile by paying cash and by installment loan given the purchase

price, interest rates, and payment period.

b. Compute the total cost of a product purchased on an installment basis given an installment purchase agreement and cost of product.

c. Identify the principles that establish and maintain good credit rating given a list of various money management practices.

5. ENABLING OBJECTIVE

Be able to demonstrate the ability to make long-range and short-range money management plans.

STANDARD OF ACHIEVEMENT

a. Prepare a yearly budget given information about income and expenses.

b. Prepare a monthly budget given information about yearly budget, income, and expenses for the month.

E. TERMINAL OBJECTIVE

The student will be able to demonstrate proficiency using the touch system on an electronic calculator in performing basic arithmetic calculations.

ENABLING OBJECTIVE

Be able to perform arithmetic calculations on an electronic calculator using the touch system.

STANDARD OF ACHIEVEMENT

a. Compute addition problems containing five numbers of two to four digits each by using a calculator at the rate of 100 digits per minute in a five-minute time period with an accuracy of 90 percent.

b. Compute subtraction problems containing two to four digits each by using a calculator at the rate of 80 digits per minute in a five-minute time period with an accuracy of 90 percent.

c. Compute 20 multiplication problems containing two to four digits each, rounding to two decimal places, within 10 minutes with an accuracy of 90 percent.

d. Compute 20 division problems containing two to four digits each, rounding to two decimal places, within 10 minutes with an accuracy of 90 percent.

Introduction to Data Processing Learning Objectives

A. TERMINAL OBJECTIVE
Demonstrate an understanding of the development of business data processing and its basic concepts.

1. ENABLING OBJECTIVE
Be able to define typical data processing terminology.

STANDARD OF ACHIEVEMENT
Given a list of DP terms, the student will define the terms.

2. ENABLING OBJECTIVE
Be able to distinguish the difference between manual, mechanical, punch card, and computer systems.

STANDARD OF ACHIEVEMENT
The student will explain and compare the four stages of mechanization in business data processing.

3. ENABLING OBJECTIVE
Be able to identify the steps in data processing operations.

STANDARD OF ACHIEVEMENT
The student will list and define the basic DP operations.

4. ENABLING OBJECTIVE
Be familiar with the historical development of data processing.

STANDARD OF ACHIEVEMENT
Given a list of historical events in data processing, the student will list the events in chronological order and discuss the events.

5. ENABLING OBJECTIVE
Be able to distinguish between analog and digital computers.

STANDARD OF ACHIEVEMENT
The student will give examples to distinguish between the two types of computers.

B. TERMINAL OBJECTIVE
Be able to understand and apply various computer data representation systems.

1. ENABLING OBJECTIVE
Be able to convert between human-readable data and machine-readable data using the Hollerith Code.

STANDARD OF ACHIEVEMENT
Given a punched card containing no print, the student will interpret the card using the Hollerith Code.

2. ENABLING OBJECTIVE
Be able to understand the binary numbering system.

STANDARD OF ACHIEVEMENT
Given a series of decimal and binary numbers, the student will convert between the two numbering systems.

3. ENABLING OBJECTIVE
Be able to understand the hexadecimal numbering system.

STANDARD OF ACHIEVEMENT
Given a series of hexadecimal numbers, the student will show their decimal equivalents.

4. ENABLING OBJECTIVE
Be able to understand the binary coded decimal (BCD) representation.

STANDARD OF ACHIEVEMENT
Given a series of binary coded decimal numbers, the student will show their decimal equivalents.

5. ENABLING OBJECTIVE
Be able to understand the Extended Binary Coded Decimal Interchange Code and the American Standard Code for Information Interchange representation.

STANDARD OF ACHIEVEMENT
Given a series of EBCDIC/ASCII numbers and alpha characters, the student will show their decimal and alphabetical equivalents.

C. TERMINAL OBJECTIVE
Be able to identify and explain the functions of the various hardware components of a computer system.

1. ENABLING OBJECTIVE
Be able to explain the functions of the central processing unit (CPU) in a computer system.

STANDARD OF ACHIEVEMENT
The student will define the CPU, give its functions, and name its parts.

2. ENABLING OBJECTIVE
Be able to identify and explain the functions of a computer system's peripheral devices.

STANDARD OF ACHIEVEMENT
The student will describe the types and functions of input devices, output devices, and secondary storage devices.

D. TERMINAL OBJECTIVE
Be able to understand the basic functions and purposes of software systems.

1. ENABLING OBJECTIVE

   Demonstrate an understanding of the basic functions and purposes of the computer's operating system.

   STANDARD OF ACHIEVEMENT

   The student will describe the functions and purposes of the computer's operating system.

2. ENABLING OBJECTIVE

   Demonstrate an understanding of the basic functions and purposes of a compiler, assembler, and interpreter.

   STANDARD OF ACHIEVEMENT

   The student will describe the functions and purposes of compilers, assemblers, and interpreters.

3. ENABLING OBJECTIVE

   Demonstrate an understanding of the basic functions and purposes of utility programs.

   STANDARD OF ACHIEVEMENT

   The student will describe the functions and purposes of utility programs and give examples of them.

4. ENABLING OBJECTIVE

   Demonstrate an understanding of the basic functions and purposes of application programs.

   STANDARD OF ACHIEVEMENT

   The student will describe the functions and purposes of application programs and give examples of them.

5. ENABLING OBJECTIVE

   Be able to describe the relative advantages and disadvantages of various programming languages.

   STANDARD OF ACHIEVEMENT

   The student will list advantages and disadvantages of each of the following programming languages: COBOL, RPG, BASIC, and FORTRAN.

Business Systems Applications Learning Objectives

A. TERMINAL OBJECTIVE

Demonstrate an understanding of the basic elements of accounting.

1. ENABLING OBJECTIVE

Be able to identify the asset, liability, and owner's equity items of a business.

STANDARD OI ACHIEVEMENT

Given an unarranged list of the asset and liability items of a business and their amounts, be able to do the following: (a) classify each item as an asset or a liability, (b) compute the total assets and the total liabilities, and (c) determine the amount of the owner's equity.

2. ENABLING OBJECTIVE

Be able to prepare a balance sheet.

STANDARD OF ACHIEVEMENT

Given the heading information and an unarranged list of assets and liabilities with their amounts, properly prepare a balance sheet. The items, content, location of the sections, arithmetic, and ruling should be arranged correctly on the balance sheet.

B. TERMINAL OBJECTIVE

Be able to analyze effects of business transactions.

1. ENABLING OBJECTIVE

Be able to show how the accounting equation is affected by business transactions that involve increases and decreases in assets, liabilities, and owner's equity, including revenues and expenses.

STANDARD OF ACHIEVEMENT

Given a list of business transactions, be able to do the following: (a) identify the basic elements changed by each transaction, (b) enter the amount of increase or decrease in the equation after each transaction, and (c) prove the equality of the equation after each transaction has been entered.

2. ENABLING OBJECTIVE

Be able to prepare an income statement.

STANDARD OF ACHIEVEMENT

Given the heading information and an unarranged list of revenue and expense items with their amounts, properly prepare an income statement. The items, content, location of sections, arithmetic, and ruling should be arranged correctly on the income statement.

C. TERMINAL OBJECTIVE

Demonstrate an understanding of recording transactions in accounts.

1. ENABLING OBJECTIVE

Be able to compute the balance of an account.

STANDARD OF ACHIEVEMENT

Given a balance sheet, be able to open an account for each item and enter the balance on the correct side of each account.

2. ENABLING OBJECTIVE

Be able to take a series of transactions involving assets, liabilities, and owner's equity and analyze each transaction by identifying the accounts(s) to be debited and the account(s) to be credited.

STANDARD OF ACHIEVEMENT

Given a series of transactions for assets, liabilities, capital, revenue, and expenses, be able to explain what happened in each transaction. Record each transaction in an account.

D. TERMINAL OBJECTIVE

Demonstrate an understanding of originating, journalizing and posting business transactions.

1. ENABLING OBJECTIVE

Be able to identify forms that are source documents.

STANDARD OF ACHIEVEMENT

Given a packet of forms, select forms that are source documents.

2. ENABLING OBJECTIVE

Be able to record transactions in a journal.

STANDARD OF ACHIEVEMENT

Given a list of transactions record transactions in a journal. All dates should be entered correctly. The correct accounts and amounts should be debited and credited. All items should be placed in the correct columns. The indentations should be correct.

3. ENABLING OBJECTIVE

Be able to post entries from a journal to ledger accounts.

STANDARD OF ACHIEVEMENT

Given a journal, post entries from journal to ledger accounts.

E. TERMINAL OBJECTIVE

Demonstrate an understanding of how to prove the ledger and how to prepare financial statements.

1. ENABLING OBJECTIVE

Be able to prepare a trial balance from the account balances in the ledger.

STANDARD OF ACHIEVEMENT

Given ledger accounts, determine account balance by pencil-footing. Prepare trial balance from the account balances in the ledger.

The heading, the account titles and numbers, the totals, and the ruling should be correct.

2. ENABLING OBJECTIVE

Be able to prepare income statements and balance sheets directly from a trial balance.

STANDARD OF ACHIEVEMENT

Given a trial balance, prepare an income statement and a balance sheet in proper format.

F. TERMINAL OBJECTIVE

Demonstrate an understanding of how to close the ledger accounts.

1. ENABLING OBJECTIVE

Be able to identify those accounts on a trial balance that would be closed at the end of the accounting period.

STANDARD OF ACHIEVEMENT

Given a trial balance, list those accounts that would be closed and explain.

2. ENABLING OBJECTIVE

Be able to record in a journal the entries to close the temporary owner's equity accounts.

STANDARD OF ACHIEVEMENT

Given a trial balance, record in a journal the entires to close the revenue and expense accounts and the entries to transfer the net income (or net loss) to the capital account. Post to ledger accounts.

3. ENABLING OBJECTIVE

Be able to prepare a postclosing trial balance.

STANDARD OF ACHIEVEMENT

Given ledger accounts, prepare a postclosing trial balance. The heading, the account titles and numbers, the totals, and the rulings should be correct.

G. TERMINAL OBJECTIVE

Demonstrate an understanding of the operation of a typical accounts receivable system.

1. ENABLING OBJECTIVE

Be able to define the purpose of an accounts receivable system.

STANDARD OF ACHIEVEMENT

The student will explain in writing to the satisfaction of the instructor the definition and purpose of an accounts receivable system.

2. ENABLING OBJECTIVE

Be able to define terminology related to the accounts receivable system.

STANDARD OF ACHIEVEMENT

The student will define a list of selected terms related to an accounts receivable system.

3. ENABLING OBJECTIVE

Demonstrate the ability to record new accounts receivable records.

STANDARD OF ACHIEVEMENT

Given a flowchart for the creation of new accounts and simulated customer credit applications, students will process applications setting up a new master record for each approved new customer.

4. ENABLING OBJECTIVE

Demonstrate the ability to update existing customer accounts.

STANDARD OF ACHIEVEMENT

Given source documents containing simulated sales and payment data and a sales/payment record format, students will verify and record each sales/payment slip and update simulated customer accounts.

5. ENABLING OBJECTIVE

Demonstrate an understanding of the purpose of the reports generated by the accounts receivable system.

STANDARD OF ACHIEVEMENT

Given a list of reports generated by the accounts receivable system such as a cash receipts register, sales register, aged trial balance, customer statements, and delinquency notices, the student will describe the uses of these reports.

6. ENABLING OBJECTIVE

Demonstrate an understanding of the relationship of the accounts receivable system to the other systems in a business such as the order-billing system.

STANDARD OF ACHIEVEMENT

The student will explain to the satisfaction of the instructor the relationship of the accounts receivable system to the order-billing and inventory management systems listing items of information that would be common to these systems.

7. ENABLING OBJECTIVE

Demonstrate an understanding of the files needed for an accounts receivable system.

STANDARD OF ACHIEVEMENT

Given the terms: master file, transaction file, control file, and new account file, the student will describe the information contained in and the purpose of each file.

H. TERMINAL OBJECTIVE

Demonstrate an understanding of the operation of a typical accounts payable system.

1. ENABLING OBJECTIVE

Be able to define the purpose of an accounts payable system.

STANDARD OF ACHIEVEMENT

The student will explain in writing to the satisfaction of the instructor the definition and purpose of an accounts payable system.

2. ENABLING OBJECTIVE

Be able to define terminology related to an accounts payable system.

STANDARD OF ACHIEVEMENT

The student will define a list of selected terms related to an accounts payable system.

3. ENABLING OBJECTIVE

Demonstrate the ability to record new accounts payable records.

STANDARD OF ACHIEVEMENT

Given a flowchart for the creation of new accounts and simulated purchase orders, students will process orders setting up a new master record for each new account.

4. ENABLING OBJECTIVE

Demonstrate the ability to update existing vendor accounts.

STANDARD OF ACHIEVEMENT

Given purchase orders and payment vouchers, and a purchase order/payment record format, students will verify and record each purchase order and payment voucher and update simulated vendor accounts.

5. ENABLING OBJECTIVE

Demonstrate an understanding of the purposes of the reports generated by the accounts payable system.

STANDARD OF ACHIEVEMENT

Given a list of reports generated by the accounts payable system such as: Invoice Register, Vendor Cash Requirements Statement, Vendor Cash Disbursements Register, and Accounts Payable Trial Balance, the students will describe the uses of these reports.

6. ENABLING OBJECTIVE

Demonstrate an understanding of the relationship of the accounts payable system to the other systems in a business such as the purchasing and inventory management system.

STANDARD OF ACHIEVEMENT

The student will explain to the satisfaction of the instructor, the relationship of the accounts payable system to the purchasing and inventory systems, listing items of information that would be needed by each system.

7. ENABLING OBJECTIVE

Demonstrate an understanding of the files needed for an accounts payable system.

STANDARD OF ACHIEVEMENT

Given the terms: vendor master file, open purchase order file, and transaction file, the student will describe the information contained in and the purpose of each file.

I. TERMINAL OBJECTIVE

Demonstrate an understanding of a basic inventory management system.

1. ENABLING OBJECTIVE

Be able to define a list of terminology related to an inventory management system.

STANDARD OF ACHIEVEMENT

Define the following terms: sales returns, reorder point, open orders, physical inventory, inventory adjustment form, inventory exception report, item number, balance on hand, stock requisition form, net available inventory.

2. ENABLING OBJECTIVE

Demonstrate an understanding of the basic objectives of an inventory management system.

STANDARD OF ACHIEVEMENT

List three system objectives of an inventory management system.

3. ENABLING OBJECTIVE

Demonstrate an understanding of how a company uses the Inventory Stock Report to determine and report its current inventory.

STANDARD OF ACHIEVEMENT

List and explain the parts of the Inventory Stock Report.

4. ENABLING OBJECTIVE

Demonstrate an understanding of how a company uses the Inventory Management Report to reflect the management of the inventory.

STANDARD OF ACHIEVEMENT

List and explain the parts of the Inventory Management Report.

5. ENABLING OBJECTIVE

Demonstrate an understanding of how a company uses the Inventory Turnover Report to measure its inventory activity.

STANDARD OF ACHIEVEMENT

List and explain the parts of the Inventory Turnover Report.

6. ENABLING OBJECTIVE

Demonstrate an understanding of the actual system requirements for maintaining an inventory management system.

STANDARD OF ACHIEVEMENT

List four requirements of an inventory management system.

J. TERMINAL OBJECTIVE

Demonstrate an understanding of a typical order

and billing system.

1. ENABLING OBJECTIVE

   Be able to define a list of terminology related to the order and billing system.

   STANDARD OF ACHIEVEMENT

   Define the following terms: order fulfillment, sales order slip, shipping order, packing slip, shipping label, customer invoice, inventory management system, accounts receivable system, sales information system, integrated business data processing, product file, customer file, back-order procedure.

2. ENABLING OBJECTIVE

   Demonstrate an understanding of the activities involved in receiving and handling original customer orders.

   STANDARD OF ACHIEVEMENT

   Flowchart the activities involved in receiving the sales order to include the credit check, product availability check, and the securing of mailing and shipping information.

3. ENABLING OBJECTIVE

   Demonstrate an understanding of the activities involved in shipping merchandise to customers to include the uses of the packing slip, shipping label, and shipping order.

   STANDARD OF ACHIEVEMENT

   Flowchart the activities involved in shipping the merchandise ordered to the customers to include the use of the packing slip, shipping label, and shipping order.

4. ENABLING OBJECTIVE

   Demonstrate an understanding of the activities involved in billing customers for merchandise shipped.

   STANDARD OF ACHIEVEMENT

   Flowchart the activities involved in billing the customers after the merchandise ordered has been shipped.

5. ENABLING OBJECTIVE

   Demonstrate an understanding of the information needed by systems that are related to order and billing such as inventory management, accounts receivable, and sales information.

   STANDARD OF ACHIEVEMENT

   List information used by an order and billing system that would be relevant to the inventory management, accounts receivable, and sales information systems.

6. ENABLING OBJECTIVE

   Demonstrate an understanding of the files needed for an order and billing system.

   STANDARD OF ACHIEVEMENT

   Name the files which would be used for an order and billing system and indicate the type of information that would be contained in them.

K. TERMINAL OBJECTIVE

Demonstrate an understanding of the terminology, procedures, and forms used in a business payroll system.

1. ENABLING OBJECTIVE

   Demonstrate an understanding of terminology related to a payroll system.

   STANDARD OF ACHIEVEMENT

   Define a list of payroll terms including pay period, pay statement, attendance/time card, FICA tax, pension plan, tax exemptions, regular earnings, overtime earnings, total/gross earnings, deductions, net earnings, wages, salary, and payroll master file.

2. ENABLING OBJECTIVE

   Demonstrate an understanding of the specialized forms used in a payroll system.

   STANDARD OF ACHIEVEMENT

   Identify the purpose of the following forms: Form W-2 Wage and Tax Statement; Form W-4 and W-4E Employee's Withholding Allowance Certificate; Form 941 Employer's Quarterly Federal Tax Return; Payroll Register; and Employee Earnings Record.

3. ENABLING OBJECTIVE

   Demonstrate the ability to manually compute employees' net pay.

   STANDARD OF ACHIEVEMENT

   Manually complete a payroll register involving employees in both overtime and non-overtime situations given a typical set of payroll data, a payroll register, and the appropriate tax tables.

4. ENABLING OBJECTIVE

   Demonstrate an ability to establish and maintain employee earnings records.

   STANDARD OF ACHIEVEMENT

   Manually establish and maintain employee earnings records given Form W-4 and/or Form W-4E, job position data, and a completed payroll register.

5. ENABLING OBJECTIVE

   Demonstrate the ability to manually complete a Form W-2 Wage and Tax Statement.

   STANDARD OF ACHIEVEMENT

   Manually complete a Form W-2 Wage and Tax Statement given the required information in unarranged form.

6. ENABLING OBJECTIVE

   Demonstrate the ability to manually complete a Form W-4 and W-4E Employee's Withholding Allowance Certificate.

STANDARD OF ACHIEVEMENT

Manually complete a Form W-4 and W-4E Employee's Withholding Allowance Certificate using the student's personal data.

7. ENABLING OBJECTIVE

Demonstrate an understanding of the interrelated activities involved in preparing a payroll and related reports.

STANDARD OF ACHIEVEMENT

Prepare a diagram that indicates the logical flow and relationship of payroll data to include the attendance/time card, Form W-4 or W-4E, payroll register, employee earnings record, payroll check/pay statement, and required governmental reports.

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APPENDICES

APPENDIX A—BUSINESS DATA PROCESSING FACILITIES AND EQUIPMENT GUIDELINES

A. Business Data Processing Facilities Guidelines

For the Business Data Processing facilities, the number of rooms will depend on the projected enrollment and number of teachers in the facility. Each classroom should have electrical outlets in the floor and in the walls so that electrical equipment can be used in each work station. Classrooms should be carpeted and electrical outlets should be flush with the floor. An electrical grid system is also needed so that flexibility of room arrangement is possible. A master switch is required so that all equipment can be turned off. The electrical needs of the Data Processing Center should be carefully considered before construction begins.

An office and a separate storage facility should be provided for the data processing teachers. The space for these areas are listed below. If cooperative office education is a part of the program, a telephone should be provided in the coordinator's office.

All laboratories for business education must be at least 30 feet wide for proper placement of minimum size business education furniture. Narrower rooms create problems with furniture placement.

Business Data Processing Classroom, 18 students, 30' x 32'

Business Data Processing Computer Center 15' x 30'

Business Data Processing Office and Storage Area, 10' x 15' and 8' x 14'

NOTE:

The wall that separates the business data processing classroom and the computer center should have double glass safety windows so that students working in the center and the classroom will be visible from either area at all times.

B. Business Data Processing Equipment Guidelines

Quantity	Equipment Description	Estimated Unit Cost	Estimated Cost
2	L-Shaped Desk, 40" x 48" with Book Rack	$ 135.00	$ 270.00
10	Tables, 36" x 72"	75.00	750.00
1	Teacher's Desk and Chair	300.00	300.00
32	Adjustable Upholstered Chair	55.00	1,760.00
2	Electric Typewriters with special office features	750.00	1,500.00
1	Overhead Projector	150.00	150.00
1	Table for Overhead Projector	65.00	65.00
1	Screen for Overhead Projector, 70" x 70"	90.00	90.00
10	Printing Calculators	300.00	3,000.00
1	Demonstration Stand (to accommodate calculator or typewriter)	110.00	110.00
1	White Steel Chalk Board 4' x 6'	125.00	125.00
2	File Cabinet, 5-drawer	150.00	300.00
4	Card File Cabinet	100.00	400.00
Computer Hardware			
10	Key-entry Devices (Key Punches, CRT's, etc.	1,600.00	16,000.00
1	Card Reader (300 CPM)	9,000.00	9,000.00
1	Printer (300 LPM)	12,500.00	12,500.00
1	Disk Unit (50 MB)		
1	1600 BPI Tape Drive	55,000.00	55,000.00

1	Central Processing Unit (128 KB Memory) w/console	
Computer Software		
	Operating System to Support Required Data Communications, Std.	
	COBOL Compiler	450.00
	Basic and/or RPG Compiler	450.00 each
	TOTAL ESTIMATED COST	$102,220.00
	Total Estimated Annual Maintenance Cost	$ 14,000.00

APPENDIX B
BUSINESS DATA PROCESSING TEXTBOOK BIBLIOGRAPHY AND FREQUENCY OF MENTION*

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1	*English the Easy Way*. McGraw-Hill Book Company

*"Frequency of Mention" indicates how many data processing programs in Virginia are using these materials.

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1	*Exploring Clerical Careers, Secretarial Careers, Data Processing Careers and Wholesaling and Retailing Careers.* Southwestern Publishing Co.
1	Feingold, Carl. *Fundamentals of COBOL Programming.* 1974.
1	Fisk, Mietus and Snapp. *Applied Business Law Workbook,* 10th Edition. Southwestern Publishing Co., 1972.
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